In addition to the release of the date, venue and theme title for the 2019 WEA National conference plus a profile on WEA Director & long standing Treasurer – Peter Stone this edition of ‘WineLines’ also includes a number of interesting and informative articles the first of which is from the Bureau of Meteorology which deals with the facts and figures associated with the extreme temperatures Australia is experiencing this summer. Other articles include grape sorting using a densimetric bath that Bucher Vaslin have developed for smaller grape intakes up to 4T/hour, A case study prepared by AIRAH covering the Sirromet’s winery decision to replace an R22 chiller with 2 ammonia screw compressors in order to reduce both its carbon footprint and operating costs, and information on AIRAH’s ‘Refrigeration Innovation’ conference to be held in Melbourne during 25-26 March,
Welcome back and I hope you all enjoyed your time over the festive period with family and friends. For those that had a break, good luck to you. For those that worked to keep our winery and packaging engines running, well done.

Vintage has now hit in many regions and with it has come the heat wave. We know that our equipment will hold up (because good engineers and tradespersons have ensured that), but we need to ensure we take care of ourselves and colleagues in this weather. Stay hydrated, take breaks and be aware of the signs of fatigue.

With exports rising (up 10% in value and 5% in volume - Wine Australia), demonstrating a robust desire for Australian Wine, we look forward to what the Engineering Field can add to our industry. This is a time to be creative and innovative in our problem solving which will lead to improvements in the industry. I encourage collaboration amongst peers and knowledge sharing so we can all improve and continue to drive growth.

Good luck and have a safe vintage - Cheers, Ben.  

Ben McDonald – WEA President

WEA Sponsorship Opportunities

The WEA has a range of sponsorship options available (Gold, Silver & Bronze) each of which have significant benefits for those companies taking on such sponsorship ranging from exposure to the wine industry via WEA publications, complementary WEA memberships and conference registrations through to the allocation of exhibition booths at our conferences.

For more information on these great opportunities please contact either David Clark – djc2@bigpond.com / 03 5358 2059 or Trevor Leighton - tleigho@bigpond.net.au / 0417 597 956

2019 WEA Sponsors

We are pleased to be able to advise that in addition to our Patron Sponsor - Rockwell Automation and Founding Sponsor the following companies have committed to sponsoring the WEA during 2019 :

**TWA Group (Thermowrap Australia)** - Gold Sponsor

**PALL Australia** – Silver Sponsor

**JMA Engineering** - Bronze sponsorship

In turn we are most grateful for the ongoing support from the above companies with whom the WEA has had a close relationship over many years.
Just a reminder that your WEA membership falls due for renewal on **April 1st**. We would be most grateful if you could attend to your membership renewal as close as possible to April 1st in order to ensure that you are kept up to date with WEA events and news plus continued access to the members only section of the WEA website therefore allowing you to access presentation materials from previous WEA conferences. Membership renewals are now handled separately from the conference registrations with the objective being to try and ensure that your membership does not lapse and that in turn you are kept fully informed of all WEA events well in advance of them taking place.

If you know of any colleagues who you believe would benefit by becoming a member of the WEA, application for membership can be made by either going to our website [www.wea.org.au](http://www.wea.org.au) or contacting Trevor Leighton on 0417 597 956 / trevorleighton@wea.org.au

The annual cost of being a member is currently only $65 which not only entitles members to receive the newsletter and other updates but also entitles you to reduced registration fees to our conferences which can result in savings of at least $50/year

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The 2019 WEA National Conference & Exhibition will once again be held at the Vine Inn in South Australia’s Barossa Valley during Wednesday 11th & Thursday 12th September with the theme title of the conference being “Future Planning & Risk Management”

**Speaker Program**
Planning is currently in its early stages and we would welcome any suggestions on what you would like to see covered in the speaker program that falls in line with the above theme and/or suggested speakers. Remember the conference is put on for your benefit so it is vitally important that we get as much input as possible regarding what issues are important to you and therefore what you would like to see covered in the speaker program.

Your feedback would be greatly appreciated and will assist significantly in ensuring that the conference program covers topics of significant relevance and interest to the Australian wine industry.

Please forward any program suggestions to David Clark via email djc2@bigpond.com

**Exhibiting**
Suppliers interested in exhibiting at this year’s event please contact Trevor Leighton at either trevorleighton@wea.org.au or 0417 597 956 to secure your preferred exhibitor booth.
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Employment Profile – Engineer – Best bottlers P/L

WEA Treasurer – (A position that Peter has held since the WEA first became an incorporated association in 1999)

- **Variety of job experiences prior to the present role**
  After finishing my mechanical engineering degree in 1980, I commenced work with the SECV in head office Melbourne but soon got the taste for site work looking after miscellaneous works contracts during the commissioning of the Newport D power station, Yallourn W stage 2 and Hazelwood refurbishment. In about 1985 my father offered my brother and I his mechanical services business as he wanted to retire. We took this on for a few years until the engineer’s job was advertised at the then Mildara Wines Ltd. 15 years later and 5 name changes, it was a great time to be in the winery game. By this time, I was more involved with packaging having rebuilt the Merbein and Yellowglen bottling facilities to bring the capacity up to 4 million cases pa.

- **Current Employer & Location**
  In 2001 we decided to break away and start Best Bottlers as a contract wine packaging plant in Mildura. Initially we purchased the Bottling assets of Norman’s Wines in Northcote and ran the business there for the first year while I designed and built the Mildura plant. Fast forward another 16 years and we are now owned by SMYA and have a 2.5 million case contract wine packaging facility.

- **Current variety of roles**
  I am responsible for the day to day maintenance of the plant and have a design role in any capital projects.

- **The best thing about the job**
  A great team to work with.

- **Current challenges**
  There is always plenty of challenges in customer requests for new types of packaging formats.

- **Future Challenges**
  Quite happy to be doing more of the same but currently I am looking at a canning option for wine and energy drinks.

- **Outside interest/hobbies etc, etc**
  Vintage Buicks and steam engines.
• **Copy of any amusing industry related photos you may have**
  One of our customers wanted an appropriate vehicle to advertise his Hill Billy Cider. Best Bottlers can provide all customer’s needs!!
Given the extreme temperatures and weather conditions that we have all been experiencing this summer the following report from the Bureau of Meteorology gives an insight into the factors that have created this situation.

Australian summers are well known for bringing heatwaves, bushfires, tropical cyclones and floods. Against this backdrop of severe weather, it can be hard to recognise patterns which are unusual, sitting outside of the range of normal climate conditions. While summer still has a month to run, climate data already show it will go down as one of the most extreme our nation has seen. So how extreme is it and what's causing the hot, dry conditions?

Late November and December 2018

After a relatively benign start to November (national mean temperature 0.93 °C above the 1961–1990 average for the month, national rainfall 16 per cent above average), late November saw the development of extreme temperatures in the northeast of the country. Impacts of this include adverse effects for tropical agriculture, multiple bushfires in the coastal ranges (some in rainforest areas) and the death of large numbers of bats. This heatwave was fed by a range of factors including a lack of cloud, particularly dry conditions in the interior, unusual weather patterns, and the background warming trend. Since then the heat has been almost relentless for many parts of the country—and unprecedented in scale and duration.

December was record-hot. For the nation as a whole, the mean temperature was 2.13 °C above the 1961–1990 average, with maximum and minimum temperatures 2.41 °C and 1.85 °C above average respectively. All three broke the previous record, set in December 1972—the peak of a major El Niño event which brought drought to much of Australia. December was a dry month overall, though severe tropical cyclone Owen during the first half of the month, and to a lesser extent, tropical cyclone Penny at the end of the month, delivered heavy rain including record monthly totals to parts of tropical Queensland.

December also featured a remarkable dome of hot air over the country, which meant that the temperature for Australia as a whole was above average for all but two days. This hot air wasn't flushed away by significant cold fronts, and remained over Australia throughout the month. Temperatures were particularly extreme in the days following Christmas, with 27 December registering the highest average maximum temperature for all December days since 1910. Temperatures peaked at Marble Bar, in Western Australia, with 49.3 °C, a new December record for that location, and just below the national December record of 49.5 °C (Birdsville, 1972).

January 2019

January 2019 set a new national mean temperature record, 2.91 °C above the 1961–1990 average of 27.9 °C. Not only does this make it our hottest January on record, but the national mean temperature of 30.81 °C is Australia's hottest for any month, breaking the record of 29.82 °C set in January 2013.
The list of area-average records broken for the month is simply remarkable. Australia experienced its warmest January on record in terms of mean, maximum, and minimum temperatures, breaking its monthly mean temperature record by just under 3 °C. New South Wales, Victoria, Queensland, Tasmania and the Northern Territory experienced their warmest mean temperatures on record for January, with New South Wales just over 2 °C above its previous record, while South Australia and Western Australia recorded their second-warmest January. Data for all States and Territories are published in our Climate Summaries.

The heat was accompanied by generally dry conditions, with the national average rainfall, of 49 mm, 38 per cent below the long-term mean. Most parts of the country saw low rainfall, with the most notable exception being coastal tropical Queensland, where a persistent monsoonal low late in the month brought heavy rainfall and flooding in some areas. The monsoon was particularly late to develop in the northwest of Australia, starting at Darwin on 23 January, nearly a month later than usual and the second-latest on record, behind 1972–73.
Map: During December–January, most of Australia saw below-average rainfall

The high average temperature reflected a lack of cooler conditions (every day was warmer than average) and persistent heat. Eight of the ten hottest days on record, as measured by national area average temperature, occurred during the month, with three exceeding the previous daily record set in January 2013. Many station records were set, including for Adelaide (46.6 °C at West Terrace/ngayirdapira—a new record for a capital city centre), Port Augusta 49.5 °C, Kerang 47.6 °C (a new Victorian January record) and 45.6 °C at Alice Springs—a remarkable number given its elevation of 546 m. Many records were also set for days above thresholds and persistence of heat. In Tasmania, Hobart saw seven days reach 30 °C or above, and 17 days reach 25 °C—both new records for the southern capital. Across the nation, most areas saw a maximum temperature of 44 °C or above at least once during December–January, with large areas reaching a scorching 48 °C.

Minimum temperatures were particularly extreme, with the pre-2019 national record of 35.5 °C broken four times during the month, by Borrona Downs (New South Wales) with 36.6 °C and 35.6 °C, Moomba (South Australia) with 36.1 °C, and Noona (New South Wales) with 35.9 °C. Many locations in New South Wales saw record high minimums during January, highlighting the extreme nature of conditions. The Northern Territory, South Australia and Queensland also saw their highest minimum temperatures on record.
Why so extreme?

Leading into summer, our Climate Outlooks suggested a high likelihood that temperature would be warmer than normal. While translating probabilities into average outcomes requires caution, such an extreme forecast of warmth suggests that a number of predictable factors were at play. Classical climate drivers included in our climate models haven’t featured prominently, with a positive Indian Ocean Dipole declining in early summer, and the Pacific Ocean experiencing El Niño–Southern Oscillation (ENSO) neutral conditions overall, though with ocean temperatures briefly touching the threshold for El Niño. Ocean temperatures have been very warm to Australia’s east in recent months, though these at least partly reflect the stable and sunny conditions which have also led to warm conditions over land. During 2018 we saw significant drought affecting much of the nation, and the delayed monsoon with low rainfall for many areas also clearly played a part.

As the State of the Climate 2018 report outlines, Australia has warmed by over 1 °C since 1910. There is also an increase in the frequency of extreme heat events and these are likely to increase further in the future. The warming trend now means that global and Australian climate variability sits on top of a higher average temperature. Our climate prediction model factors the trend in through the use of modern carbon dioxide concentrations and global temperature data.

There are a range of scientific methods which can be used to provide an objective estimate of whether climate change played a role in this extreme summer. Previous studies have shown that the extreme summer heat of 2013 was at least 2.5 times more likely to occur with the enhanced greenhouse warming. The 2019 summer is shaping to be even more extreme than 2013.

More information
Subscribe to receive climate information emails.
Australia’s 2018 in weather: drought, heat and fire

Subscribe to this blog to receive an email alert when new articles are published.
BUCHER VASLIN - Delta Densily,

Bucher Vaslin presents an innovative sorting technique using the berries’ density. This technology also allows the removal of the floating vegetal waste.

Sorting is a critical step in the vinification process. Many wineries have invested in grape sorting equipment in the past decade and, so far, the results are very encouraging, and will attract more interest from winemakers in future.

For many, grape sorting is already a “must” in the processing of grapes in the cellar, such is the impact on the finished product. An efficient sorting will:

- Select the ripe berries, the most desirable fruits
- Eliminate vegetal waste, insects and non-ripe berries

Densily – a new berry solution, simple and efficient

The grapes are first destemmed and fed into the densimetric bath. The bath can be either grape juice or water to which sugar has been added to set the sugar level.

The most ripened berries, the heaviest, will sink to the bottom where a sieve belt will convey them towards the output of the machine. This sieve belt is the heart of the machine and has been protected by a patent. The good berries will be gently picked and transferred whilst separated from the liquid. During this process each berry is also slightly rinsed which, in some cases, can be a major benefit.

All the while, lighter items such as leaves, stems bits, etioles, insects, green berries, seeds, all float to the surface and overflow in the waste conveyor in a continuous waterfall.

This machine has been designed for the smaller grape intake. It is compact, mobile, easy to understand and to adjust and, like all Delta equipment, made to be easy to clean. At 4T/Hour its price tag is also very attractive.

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Your success is our priority
The Natural Crop

Committed to reducing its carbon footprint, the Sirromet Winery outside Brisbane has replaced its R22 chiller with two that run on ammonia.

Located 40km south-east of Brisbane, the Sirromet Winery made the decision to upgrade its refrigeration equipment.

Sirromet replaced its existing 15-year-old R22 chiller with two screw compressors that use ammonia refrigerant. A variable-speed drive is fitted on the base-load compressor, and variable-speed fans to the evaporative condenser.

The plant chills the Alcool LF secondary heat-exchange fluid, which is reticulated in a closed loop throughout the winery. A 25,000 litre internally divided buffer tank provides further thermal storage to trim peak loads.

By using an evaporative condenser, lower condensing pressures are achieved in comparison to an air-cooled system. This results in a lower compressor compression ratio, with reduced energy costs for every kilowatt of refrigeration.

The use of a variable-speed drive on the base-load compressor allows the plant to reduce its capacity to just 60kWR, while still maintaining high efficiency.

Another benefit of this type of plant is that heat can be recovered from the compressor heat of rejection and oil cooling. Water is reticulated from a tank through the two heat exchangers to deliver a minimum of 60°C across most of the duty range.

Energy saving and emissions reductions

Based on Sirromet’s average medium-load run time, the theoretical estimated cost saving of electricity for the new ammonia chiller is up to 32 per cent per annum. This represents savings of up to $20,000 per annum based on a reasonable electrical tariff.

The change from an outdated air-cooled F-gas system to an ammonia system has seen CO2 emissions drop by 0.35kg of CO2 for every 750ml bottle of wine. On an average production of 1,000,000 bottles, this accounts for a reduction of 350 tonnes of CO2 emissions.
The system delivers further reductions in emissions, because the ammonia refrigerant has an ODP (ozone-depletion potential) and a GWP (global-warming potential) of zero. This means that the GWP effect of emissions due to refrigerant leakage is now zero instead of 1,500 for every kilogram of refrigerant lost.

A change to ammonia chillers has seen Sirromet reduce its CO₂ emissions by 350 tonnes per annum

**Safety aspects**

To reduce the possibility of winery personnel being exposed to refrigerant leakage, the plant is located outside, allowing quick dispersal of any leakage. The system is also fitted with emergency stop functionality, and features remote monitoring. The plant also uses a welded cassette heat exchanger and fully tested vessels and pipe work.

**How does it work?**

Sirromet’s chief winemaker Adam Chapman says that during the vintage period the ammonia plant runs effectively.

“It is quiet, efficient, very powerful, and yes, smart too,” Chapman says. “When needed the power is there within three minutes, fully loaded on two compressors.

“At the end of the day, this system is efficient, deals with technology with ease and works well for the owners and winemakers at Sirromet.”

**Project at a glance**

<table>
<thead>
<tr>
<th>Refrigeration plant capacity</th>
<th>480kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigerant type</td>
<td>Ammonia</td>
</tr>
<tr>
<td>Compressor type</td>
<td>2 x Bitzer OSKA8561 screw compressors</td>
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<tr>
<td>Condenser type</td>
<td>Evaporative – Aqual cool</td>
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<tr>
<td>Design temperature</td>
<td>Cool Alcool LF to -6o°C at 33L/s</td>
</tr>
<tr>
<td>Heat reclaim capacity</td>
<td>85kW of pre-heated water for gas-fired boilers</td>
</tr>
<tr>
<td>Installing contractors</td>
<td>Gordon Brothers</td>
</tr>
</tbody>
</table>

**Need to know?**

This case study was prepared by AIRAH’s Natural Refrigerants Special Technical Group. For more information about AIRAH’s STGs, go to the “Resources” of www.airah.org.au

This article originally ran in the June 2014 issue of Ecolibrium, which is published by AIRAH. For more information, go to www.airah.org.au/ecolibrium
AIRAH has announced a compelling list of speakers for the Refrigeration 2019 conference, which will take place over March 25–26 in Melbourne.

Headlining the event are four international keynote speakers: Germany’s Professor Dr Michael Kauffeld, the Netherlands’ Jan Gerritsen, and Iain Campbell and Andrew Pansulla from the US. They are at the top of a list of 25 expert speakers delivering presentations across the two days, which will also include two special sessions.

Since 2002, Kauffeld has been a professor for refrigeration at the Karlsruhe University of Applied Sciences, where he continues his research with natural refrigerants, mini-channel heat exchangers and ice slurry. He serves on the UNEP Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee, and served on the UNEP TEAP Task Force on Global Warming.

Hailing from Colorado’s Rocky Mountain Institute, Campbell will discuss the Global Cooling Prize, an initiative aimed at unearthing a more efficient air conditioning solution.

Pansulla is the global technical service engineer for Chemours Refrigerants. Over the past five years with Chemours/DuPont, he has worked on several different projects around refrigerant development.

Gerritsen will provide a transparent review of mid-sized CO₂ refrigeration systems.

Other speakers at Refrigeration 2019 will address issues as diverse as HFC-free supermarkets, recent developments in desiccant technology, indirect evaporative air cooling, using data variation in testing refrigeration system performance, central NH₃ refrigeration systems with dry expansion, and fire engineering in refrigerated cold storage occupancies.

In addition to the presentations by expert speakers, the conference will include two extra group activities. One will be a contractors’ panel session, the other a refrigerated warehouse case study and workshop.

For more information, email AIRAH communications manager Matthew Dillon via matt@airah.org.au